Reg.No: | | | | | | | | | | | |

D. K. M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1

SEMESTER EXAMINATIONS

NOVEMBER – 2018 **15SMA5A**

SKILL BASED SUBJECT - III : NUMERICAL METHODS

Time : 2 Hours **Max. Marks : 50**

SECTION - A (10 x 2 = 20)

Answer ALL the questions.

1. *What is Central difference operator? Explain.*
2. *What is the relation between E & Δ?*
3. *Prove that* $\Delta[f(x)g(x)] = f(x+h)\Delta g(x) + g(x)\Delta f(x)$.
4. *Write Newton's Forward and Backward Interpolation formula.*
5. *Write the formula for Simpson's 1/3rd and 3/8th rule.*
6. *What is numerical integration? Explain.*
7. *Give the formula for Taylor's rule.*
8. *Solve by Gauss Elimination method 2x+y=3; 7x-3y=4.*
9. *What is the aim of Euler's method?*
10. *Write the formula for Picard's method.*

SECTION - B (3 x 10 = 30)

Answer any THREE of the following questions.

11. *Solve the equation* $x^3 + x^2 - 1 = 0$ *for the positive root by Iteration method.*

12. *Find the missing term in the following data by using Newton's Backward difference formula.*

X	1	2	3	4	5	6	7
Y	2	4	8	-	32	64	128

13. *Solve the system of equations by i) Gauss elimination method ii) Gauss Jordan method,*
    x+2y+z=3; 2x+3y+3z=10; 3x-y+2z=13.

14. *Using Euler's method, solve numerically the equation,* $y' = x + y, y(0) = 1$ *for x = (0.0)(0.2)(1.0).*

15. *Evaluate* $\int_0^1 \frac{dx}{1+x^2}$, *using Trapezoidal rule with h=0.2. Hence obtain an approximate value of* π.

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